composed of two impressions of the same stamp (b). The central division of the panel is occupied by seven impressions of a rectangular stamp, representing within a large quatrefoil, flanked by four smaller ones, David crowned, seated with his legs crossed, playing the harp (c); on each side of this figure is a small quatrefoil. The lateral divisions have each four circular and three triangular stamps, the former representing a griffon (d), the latter a heron standing on the back of a pike (e); the intervening spaces being relieved by small circles and quatrefoils. 2nd Side. Vertical portions of the border: nine rectangular panels of interlaced work formed by two dragons with fluted tails, and ten containing a foliated cruciform ornament; these are connected at both head and foot by a row of five palmated leaves (f). Central division: eight impressions of a rectangular stamp representing a lion passant within a quatrefoil flanked by four trefoils. Lateral divisions: four eight-leaved rosettes (g), and three lobe-stamps with two dragons, from the union of whose tails springs a stem terminating in a fleur-de-lys, on which is perched a bird (h), the intervening spaces relieved by quatrefoils and small circles. The circular stamp (i), representing a dragon with a tail terminating in foliage, is from the binding in the British Museum referred to above.

Technical Bookbinding.

Chapter I.—Introductory.

We are assured by one writer on Bookbinding that the trade has been “ranked among the most difficult of the arts,” and that it is one “requiring much care, great neatness, correct taste, and attentive practice, to form a skillful workman.” By another author we are told that the art is “one which any intelligent and fairly handy man can practise at home.” The latter statement was made by a gentleman who addressed amateurs; it may, therefore, be taken merely for what it is worth.

The series of Papers of which this is the first, is intended for the guidance and instruction of those who are called upon to exercise the craft in order to gain a livelihood. It is therefore proposed to treat of each branch of the art in a thoroughly practical way, pointing out the difficulties which occasionally arise, and showing some of the means by which they may be overcome. Through these papers it is hoped to furnish such information as will teach the workman at all times to set about his work with a full knowledge of what should be done, and the best way to accomplish it.

Small bookbinders, whether in London or the provinces, who have not the appliances usually found in large binding works, will be especially considered. Country binders generally are taught and have to exercise each branch of the art, from the folding to the completion. A clear and concise description of the various operations will be given, combining many practical hints, receipts, and “wrinkles,” which will be found useful and labour-saving, not alone to small bookbinders, but to those employed in large firms who are desirous of advancing in the particular branch of the art in which they are engaged.

There are no fewer than sixty divisions and sub-divisions of the work of binding a book. It will be manifest that to gain a thorough knowledge of each of them is no very easy task. A clever forwarder may be an inferior finisher; a quick and even folder may prove a slow and slovenly sewer; a good strong case-maker may be useless at the blocking machine or
the arming press; and the reverse in each case. It is because there is so much to learn and practise, that so few bookbinders attain all-round excellence. The system of division and sub-division of labour may tend to make the workers expert—yea, even perfect, in the branch they exercise; but, if called upon to bind a book throughout and finish it completely, such branch experts seldom turn out anything but sorry specimens of the art.

Although "the whole art of bookbinding" may be difficult to attain, and he who endeavours to master the art will be frequently discouraged when attempting some of the difficult branches, it should not be forgotten that perseverance will overcome many obstacles, and that repeated efforts, with strict attention to all the minor details, will assuredly lead to success.

Machinery has been employed so largely in bookbinding during the last quarter of a century that these papers would be incomplete without reference being made to the various machines now in general use, and some of those which have not yet been altogether discarded. Were it not for the folding, rolling, backing, blocking, rounding machines, &c., &c., the large editions of works now so constantly demanded could not be issued in time. Each machine and appliance will be noticed in turn, as the branch in which they are used is referred to.

The history of bookbinding machinery is replete with interest. By whom each special machine was invented and manufactured; by whom it has been improved; and the variety there now is for bookbinders' use;—these will all form subjects of research, and it is hoped to place a fund of acceptable and reliable information about machinery before the readers.

In order to fully attain this object communications are invited from manufacturers, bookbinders' engineers and others who may wish to have their machinery noticed.

It sometimes happens that an undoubted improvement in a machine suggests itself to a workman who is constantly employed thereat. He sees how, by means of a few simple alterations, greater facilities would be afforded, strength imparted, or speed accelerated. It would be advantageous, not only to the trade at large, but to all such workmen themselves, if their suggestions obtained full publicity. The columns of the Bookbinder will at all times be open for communications of such a nature, and if desired, diagrams and technical descriptions of the improvement aimed at will be inserted.

Again, workmen have been known to successfully experimentalize with tools and machinery with a view of adapting and using them for other purposes than those for which they were intended. Accounts of such experiments will be cordially received; and since mutual instruction has now become general, and technical education is making rapid advancement, it is hoped much benefit will accrue from the publication of such details.

It is unnecessary, by way of introduction, to say but little more as to the object of these papers. They are addressed to practical binders, and therefore technical terms will be used throughout. A small space will be reserved at the end of each paper, in which answers will be given to those who may wish for further information on the branch last noticed.

Chapter II.—Gathering and Collating.

Unquestionably, it is the duty of the printer to gather the sheets or signatures of a book when they have been worked off, dried, and pressed or rolled. A printer's warehouse is usually fitted with gathering boards for that purpose. Say an edition of one thousand books
has to be gathered: each pile of sheets should be placed side by side, in alphabetical order, with the signature, which is on the first page, upwards and to right front side. The piles, or "heaps," should be placed conveniently close to each other, but must not touch. The printers' and binders' alphabet of signatures contains twenty-three letters only, J, V, and W being omitted. All being placed in order the warehouseman commences gathering by first taking a sheet from the heap of the last signature; he proceeds to gather a sheet at a time from each heap, working his way backwards until he reaches signature A (the title sheet) which comes at the top. Having now gathered a complete book, he knocks it up straight, and places it aside. This operation is repeated until the whole edition is gathered. Care should be taken, when each book is gathered and placed aside, to let the copies overhang each other alternately; this will facilitate the next operation.

**Collating.**

To examine or compare, to see that not one signature has been missed or transposed, or that two sheets of the same signature have not been gathered instead of one. This examination requires a quick eye and great attention. To facilitate the operation a collating needle should be used. This being pressed very lightly on the paper lifts it easily, and shows whether the consecutive signature is in its proper place or not. When the collation is finished, each perfect book is doubled over and then packed up and labelled for the binder, thus—"50, Barnaby Rudge." All waste or superfluous sheets should be put into a separate parcel, or with the last lot of books. From these the binder often is able to replace an imperfect or torn sheet, or make up an extra copy of the work. Attentive care is absolutely necessary both in gathering and collating, for nothing is so vexing to a reader as to discover when he has half read through a book that eight or sixteen pages are wanting, or that a certain signature has been duplicated. This, however, is often the case.

[To be continued.

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**Some Notes on English Blind-tooled (Stamped) Bookbindings of the Sixteenth Century.**

By W. Salt Brassington.  *(Continued from page 184.)*

The illustration on the next page is a photographic reproduction of the obverse cover of a volume of the minor works of Savonarola, bound by John Reynes; in our last note we gave a photograph and description of the reverse of the same book.

The stamped block shown measures 4½ inches by 3½ inches; the border is just half an inch wide. The subject was evidently chosen with a view to suit the contents of the book. In arrangement the design is similar to the St. George block described in our last number.

A narrow border surrounds the picture, and here again we notice a similarity in design, both borders being composed of foliage and animals treated conventionally. The feeling is the same in both. Here the animals appear to be a coney, an eagle, two dogs, or deer, and a cockatrice. Within the border at the top is an arch, with ornamented spandrels. The subject of the picture is the *Baptism of our Lord*, treated in an entirely and truly pre-
Gathering, as usually carried out, is tedious and tiring work. Say, a thousand edition of a book of twenty sheets of double crown is laid out on the boards to be gathered, the workman has to travel on foot more than seven and a half miles before the whole thousand books are collected.

The printers of The Bookbinder (Messrs. W. Clowes & Sons, Limited) do the greater part of their gathering by steam. They have constructed a huge revolving gathering machine, the table of which is wide enough to take on a full-sized double-royal sheet, and it being about sixty feet in circumference will hold at least thirty heaps of sheets. The workman takes up his station at the heap containing the last signature, and as the table revolves the various sheets are brought to his hand. He is able to gather them quickly, besides being saved the labour of walking from heap to heap. The gigantic steam traveller, to quote Albert Smith,

"Whirls round and round like a thing at a fair."

Printers now-a-days shirk this work of gathering and collating as much as they possibly can. Editions of works are larger than they formerly were. As the sheets are taken from the hydraulic press or rolling machine they are delivered to the binder, who at once causes them to be folded, either by hand or by a folding machine, and then the book is gathered and collated after it is folded. It is not proposed to decide which system is best, but evidently, the binder has one, if not more, extra operation to perform. It often happens that although the binder receives all the copies of an edition that is printed, and signs the printers' delivery-book in acknowledgment therefor, he only has orders from the publisher to bind a portion of that edition, and has to warehouse the remainder until required to be bound. Sometimes, when the last portion of the edition is wanted, the stock left is found to be short or imperfect, as the books being ungathered there are no means of checking, especially if there are plates to be inset. Then disputes arise, and frequently the binder, who had perhaps signed the delivery-book on faith, has to suffer a loss in making up the deficiency. The modus operandi of gathering and collating has been described for the obvious reason that so much of it now falls to the binder's share. For the small binder the description may be useful; and to such, gathering after folding is recommended, since it requires less space.

FORWARDING.

Chapter III.—Folding.

Properly speaking, folding is the first operation in bookbinding, and, whether done by hand or machine, requires extreme care. Nothing is so offensive to a reader's eye as a badly-folded book. The printed matter, if properly gauged by the printer, should when the sheet is folded present a fair margin all round, with a trifle extra at front and foot to allow for cutting the edges. If the folder folds to the edges of the paper there will most probably be a spoiled book. The speed at which printing machines run makes it impossible to ensure that the printing shall fall in the centre of every sheet of paper; were this so, folding to edges might do; but the surest way is to fold to the folios.
Books are of various sizes; there are 32mo., 24mo., 18mo., 16mo., 12mo., 8vo., 4to., and folio. These terms mean, that whatever the dimensions of the sheet of paper may be on which the type is printed, it is to be folded up so as to form the number of pages indicated, 32, 24, etc. pages, or half the number of leaves. There are certain defined sizes of paper, such as imperial, royal, demy, crown, foolscap and pot. Paper-makers likewise supply these sizes “in the double” and “quadruple,” for the convenience of printers. In the present day paper is also made to any required number of inches, both in length and width, and in consequence many odd-shaped books are published. But whatever the dimensions or stated size of the sheet of paper on which the type is printed, it must be folded to represent the twelfth, the eighth, etc., as the case may be, of that sheet of paper.

The most general size of a book is 8vo. (octavo), that is, the sheet when folded forms eight leaves or sixteen pages. The type is imposed or laid down by the printer in such a way that when the sheet of paper is printed it can be folded so as to ensure the sixteen pages following consecutively. This will be apparent from the scale here shown:

**A Sheet of Octavo.**

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**Outer Side.**

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<td>16</td>
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</table>

**Inner Side.**

As the sheet has been printed on both sides, i.e. “perfected,” the folder must take the collated sheets of the work, open them out, and lay them flat on the board, with the outer sides, known by the signature letter (b) downwards, and the inner sides, distinguished by the second signature (b 2) uppermost, and in the right front. Taking the implement called the folding-stick in the right hand, the sheet is to be bent with the left hand by the angle to the right, care being taken that folios 3 and 6 are adjusted exactly on folios 2 and 7, and the running headlines (if any) precisely even and opposite to each other. The sheet being thus set to register is to be creased down with the folding-stick, when pages 4 and 13 and 5 and 12 of the outer side will be found uppermost. Pages 5 and 12 must now be brought down and folded over on to pages 4 and 13; the same care being observed as to precise register. The sheet is now reduced to quarter size, and pages 8 and 9, the middle pages of the whole
sixteen, will be topmost. These must be doubled upon each other, figure exactly opposite figure, and the sheet will be found to be folded in correct order, page 1 being in front and 16 at the back. So on throughout the volume, sig. C 17 to 32, sig. D 33 to 48, sig. E 49 to 64, etc. etc.

By the first fold of the 8vo. sheet as described, is shown the way to fold into folio, that is a half sheet, pages 1 and 4 being the outer side, 2 and 3 the inner. By the second and third folds may be seen the manner in which to fold a 4to. sheet of eight pages, 3 and 6 being brought down on to 2 and 7 and then 4 and 5 doubled over.

The 12mo. or 24-page sheet is partly folded on the 8vo. principle. The first and last eight pages form the 8vo. whilst the middle eight called the offcut, or inset, are laid down or imposed with them, and present this appearance:

A Sheet of 12mo.

The top row of pages must be cut off at the guillotine cutting machine. The outer side should then be laid on the board. The worker next places page 11 upon 10 and makes a fold that will bring 12 and 13 to the top; these must be doubled on each other, when page 9 will be in front and 16 at the back; this section is then inserted between pages 8 and 17, which form the middle of the folded 8vo. portion of the sheet. Attention must invariably be paid to exactitude of registering headlines and folios.

An 18mo. sheet consists of three half-sheets of 12mo., and forms 36 pages. Other sizes are only duplicated 8vo. So that the description of the two forms given should suffice for all sizes, as to the manner of folding.
When all the sheets of the book are folded they should be placed in consecutive order, and "knocked up" between the hands on the table, first loosely then tightly, so as to bring the backs and heels perfectly even.

[To be continued.

Hand-Wrought Leather for Recreation Classes.

We have received from Miss L. M. Forster, of West Hackhurst, Abinger, Dorking, a few examples of bookbinding, pocket-books, blotting-books, &c., made of thick leather (plain basil), and decorated in a bold and effective way by hand-pressure.

In her own village Miss Forster has evening classes, and teaches her young pupils, the boys of the neighbourhood, the use of the simple tools that are requisite, and, in the hope of inducing other ladies to follow her example, has written the following description of the process employed:

The work in question may be described as drawing on wet leather. The lines are first drawn with an agate or bone style, and then deepened with a variety of tools. The effect obtained is that of a design in smooth leather, more or less raised by the background being punched down.

Leather decorated in this way is suitable for pocket-books, purses, blotting-books, card-cases, chair-covers, or for binding books.

Materials.—Strained basil, of French manufacture, is the leather of which I have had most experience, and about which I propose to write, but calf may be treated in much the same way. The other materials recommended are, transparent butter paper; a bone style or knitting-needle; two steel or brass wheels, one the twelfth of an inch wide, and another half that width; two shoemaker's bent awls, to match the wheels exactly in width, the points to be ground off square; a screw-driver, ground down so that by using the tip a fine line is
Technical Bookbinding.

Chapter III.—Folding (continued from page 24.)

Sometimes books are printed in what is termed the half-sheet. When the half-sheet is perfected it forms two copies of the printed matter. In such cases cut the paper in half, the 8vo. in the direction of the point-holes, and the 12mo. in the oblong or lengthwise direction of the paper. The offcut of the 12mo should be laid apart, and afterwards inset.

There are also oblong-shaped books, which require to be folded somewhat differently. A sheet of oblong 8vo. has three folds—the first in the middle of the sheet, in the direction of the point-holes; the second is to be made in the same direction between the head-lines of the pages; but the third fold, to ensure a proper back, must be made on the long way of the paper.

A Sheet of Oblong Octavo.

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<th>11</th>
<th>12</th>
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[Diagram of a sheet of oblong octavo with outer and inner side labeled]

Turning the outer side downwards, pages 3 and 14 are to be brought on to pages 2 and 15; when 4 and 13 and 5 and 12 will come uppermost. These should be folded over upon each other, when 8 and 9 will appear, thus [Diagram of folding process]. The sheet having been twice folded lengthwise of the paper, leaves a short back and oblong pages; when doubled at the back the sheet will be found perfect. This scheme has been described for the benefit of binders who have receipt-books, rate-books, or works with counterfoils, which are mostly done up in the oblong form.

Another peculiar size is a sheet of 18mo. to be folded without cutting. It is not so frequently adopted as formerly, but is very useful for pocket diaries and small assurance tables where stitching will suffice, and do away with sewing the three twelve-page sections. When printed the matter appears as under:
### A Sheet of Eighteens to be Folded without Cutting.

<table>
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<td>31</td>
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<td>28</td>
<td>29</td>
<td>32</td>
<td>33</td>
<td>34</td>
</tr>
</tbody>
</table>

**OUTER SIDE.**

| 35 | 36 | 1 | 2 | 3 | 6 | 31 |

**INNER SIDE.**

The outer side being downwards on the board, the first fold consists of placing pages 2, 11 and 14 on to 3, 10 and 15; the sheet is then to be turned over lengthwise, and a second fold made, namely, pages 32, 29 and 20 are to be placed in register with 33, 28 and 21. The sheet is thus folded into long thirds, leaving six pages of the outer side upwards. The third fold is made by bringing pages 13 and 24 down on to 12 and 25. The sheet should be then again turned in the same direction when pages 7 and 30 are to be folded on to 6 and 31, making a fourth fold, and leaving only pages 18 and 19 for the fifth and last fold. These pages form the middle of the sheet, and when doubled upon each other the whole sheet of thirty-six pages will be found to fall in consecutive order, and the pamphlet ready to be covered and stitched.

The key-number of this folding is 37; that is to say, as the first and last folios added make 37, so every other two pages with a back between them also make 37 when added:—20 and 17; 16 and 21; 24 and 13, &c.

There are occasionally printed 12mos. to be folded without cutting. This is effected by the printer turning the offcut, as shown in the August issue of *The Bookbinder*, with the head-lines towards the margin of the sheet; the folding operation is nearly the same, but a separate inset is avoided. Extra and extreme care is however needful in getting the head-lines and folios to register on each other, or both heads and tails of the book will be inevitably ruined. *Lloyd’s Weekly Newspaper* is a half-sheet of 12mo. folded without cutting, and it is not only awkward to handle, if it is desired to keep the paper intact, but when cut by hand according to its often inaccurate folds, looks ugly; 12mos., happily, are not much adopted now.

In the binding of magazines and serials, or works issued in parts, which have been previously folded and stitched or sewn, it will frequently be found imperatively necessary to refold the whole or great part of the numbers. This should be very carefully attended to. After the parts have been stripped of their wrappers and taken to pieces, every shred of thread picked out, and the glue or paste, if any, removed, the sheets should be examined for turned-down corners, or “dogs’-ears;” such must be smoothed out with great care or they may tear off. Then the margin must be inspected and compared one part or number...
of the magazine with another. It generally happens that some numbers have to be refolded if the binder desires to make a neat book; if this is neglected, when the book is bound the best leather or cloth and the finest finishing will be thrown away, for the inside of the book will present an ugly, irregular appearance—some pages may have too much margin and little or no back, others the head-lines may be near the top-edge of the book, or so low down on the page as almost to cause the tails to be docked by the plough or cutting-machine. This precaution should never be neglected. A book that has been bled, whether at top, bottom, or fore-edge, is a disgrace to its binder—and a lasting one, too.

There is in the present day an enormous amount of folding executed by machinery. Every large bookbinding firm of note possesses a book-folding machine, as also does nearly every newspaper proprietor whose daily or weekly journal can boast of a fair circulation. These machines are made of different capacity, and some of them can be easily adjusted from one size of paper to another. They are also constructed for two or three folds only, and for three or four folds, as may be necessary. Most engineers who cater for printers and bookbinders manufacture a folding machine, and there are machines with special features to suit various requirements.

It is very interesting to watch one of these machines while in working; to see a heap of printed sheets on the feeding board stroked in one by one and laid to the points. The knife, as it is termed, falls swiftly upon it, right in the centre, folds it in half, and drives it down an aperture, where another knife catches it, doubles it again into 4to. size, and sends it to where the third knife folds it into 8vo., or a fourth knife into 16mo., then creases it down the back and drives it on to the delivery board. This is done so rapidly and uninterruptedly that the folded sheet is delivered almost before an ordinary hand-folder could have made a single fold.

Some of the machines now in the market will fold 2000, 3000, and even 4000 sheets per hour. There are American, English, French, German, and Swiss inventions to choose from. Among the English makers may be mentioned Messrs. R. Cundall & Sons, of Ashley Works, Shipley, Yorkshire. This firm's machine is called the “Victoria” and is a patent. It is made in three sizes, and will fold sheets of different dimensions ranging from 13 in. by 10 in. to 40 in. by 30 in.; it is fitted with receivers or packers, and with points and a gauge. Its speed is from 1000 to 1700 per hour, according to the power of the layer-on.

Mr. Louis Simon of Nottingham, Mr. James Salmon of Manchester, and other large manufacturing engineers, also advertise folding machines possessing special merits.

The “Martini” Patent Duplex Folding Machine is a very meritorious mechanical worker. Mr. W. C. Horne, of 6, Dowgate Hill, the London agent for the Swiss inventor, claims as a speciality of this folder that it does not contain one inch of moving tape to carry the sheets whilst in process of folding, which most of the others do, and that large-sized journals as well as small books are being folded with it; that no re-folds are ever necessary, and each sheet is pressed between steel rollers, and delivered already knocked up. The machine has obtained high awards when exhibited, and nearly 250 are in use.

The “Martini” Folder was exhibited in England as early as 1851, at the Great Exhibition, but, although highly commended, the British binders were slow to adopt it. Not so the
Continental binders: those gentlemen patronized it largely, and nearly every firm of importance in France, Belgium, Italy, and even Germany, set up one or two in their workshops. When the English patent had expired, Mr. Simon of Nottingham brought out a folder of somewhat the same description, and then other English engineers followed. Since that period there have been numerous improvements made in the "Martini" Folder, and, under the agency of Mr. W. C. Horne, it has become a very great favourite among our large binders, some of whom have as many as seven at work. The inventor whose name the machine bears may be recognised as one of the joint originators of the Martini-Henry rifle. Mr. Martini was one out of 170 who competed in answer to Her Majesty's Government's request for a new rifle. This deadly instrument was of great service to the British troops in South Africa; yet the Government were slow in recognising the inventor's claims, and it was not till many years had elapsed that Mr. Martini did receive a recompense for his invention. He was then only awarded £6000. The law is now altered. Any invention which may be adopted has its value assessed, and the sum so arrived at is immediately paid.

The favourite Folder in America is manufactured by Messrs. Chambers Brothers, of New York. There are some thousands in use all over the United States.

But the wonderful folding machines are those attached to daily and weekly newspapers. What gigantic powerful mammoths the combined machines are! The enormous reels or webs of paper at one end, ever unwinding; their revolving cylinders covered with the curved stereo plates of the massive pages, ever rolling round; the circular knives spinning and cleanly cutting or serrating the edges of each portion of the web of paper forming a newsheet, the folding machine catching this immediately, doubling it up over and over, and casting it off ready for delivery.

It seems marvellous. There are several of these manufactured, one is used on the Standard, the Morning Post, and most of the other large daily or evening newspaper offices, both in London, the provinces, and in some of the colonies. This was invented by
Messrs. Joseph Foster & Sons, of Preston, Lancashire. Another, the “Victory,” which has a wide reputation all over the world, is produced by a Liverpool Company of Manufacturing Engineers.

These giants, it has been thought, have caused many people who gained their livelihood by folding to lose their occupation. But that is doubtful. Before folding machines were known the daily and evening news-sheets were not folded at all, but sold as they came from the news-vendor, and many a time has a purchaser eager to read the news had to stand in the street and fight with the wind before he could double up his paper.

[To be continued.]

Correspondence.

To the Editor of The Bookbinder.

Sir,—It is with very great pleasure that all lovers of old bookbinding will welcome a series of articles from Mr. Weale on a subject of which he has special knowledge, and none more so than myself, for whom the subject has long had a special attraction; but his first article, if he will excuse me saying so, raises a great many points and answers none; and some of these points are so interesting that I am sure he will excuse this perhaps premature desire for information.

If we find panels or bands differing entirely in subject and style, yet bearing the same initials and presumably of the same period, are we to ascribe them, failing other evidence, to the same or different binders? To give an example quoted by Mr. Weale. We find three or four panels and bands signed N. S. The name in one case we know (N. Spiernick, the Cambridge binder). To whom are we to assign the others (for designs must in many cases go for nothing, since any binder could copy those of any other)—to N. Spiernick, or to some other binder?

Mr. Weale scoffs at some remarks from another article in The Bookbinder which tells us that Julian Notary was the first binder in England to use the particular style of large block panel design which Mr. Brassington was writing about. To demolish this theory, Mr. Weale considers it only necessary to contradict it; but this is small satisfaction to readers who are anxious for information—we do not want, as our greatest bibliographer said, the “dictum” of any bibliographer, however experienced. Now Notary’s design, as far as I can find, began to be used in 1507–8. What other binder used this kind of work in England before 1507–8?

Mr. Weale objects to the following remark of Mr. Brassington concerning an I. R. binding, “One of the most beautiful and essentially English bindings of the period was fashioned in the workshop of John Reynes,” by saying that the tools used to produce it are not English—which seems a weak objection. The binding, as I am sure Mr. Weale must allow, is very English; and as to I. R., though there is great probability that it does not stand for John Reynes—has it yet been absolutely proved?

In conclusion, I should like to ask Mr. Weale two questions which have for some time puzzled me.

How is it that when you examine several of Notary’s bindings together carefully, you
Technical Bookbinding.

CHAPTER III.—FOLDING (continued from page 61).

An excellent book-folding machine has been patented by Messrs. C. T. Watson & Co., of 76, High Holborn, London: it is called the "Triumph." The largest three and four folds machine of Messrs. Watson will take a sheet 32 in. by 46 in. The firm claims that it is easily adjusted from one size sheet to another; that all the parts are accessible; the points can be regulated to work the finest tissue paper, badly-laid sheets are thrown out, and the knife will not descend until the sheet is pointed.

Messrs. Watson have also a "Triumph" Folding, Pasting, and Covering Machine. It is capable of folding and pasting eight, sixteen, or thirty-two pages, saving the cost of wire or thread sewing; or, will fold, paste, and trim eight pages; or, fold, paste, and cover sixteen pages at one operation. It turns out the work very cleanly, all the leaves firmly adhere, and its speed is very great.

This latter machine is intended for publishers' binders who are called upon to fold and cover weekly periodicals, the issues of which are often very large, and the time allowed for the final operation necessarily short. Some firms who use it consider it a great boon. If the
reader will look at a number of "Texas Sittings" he will be able to form an opinion of the powers of this "Triumph," of which an illustration is here given. The table being folded back out of the way as when not in use.

CHAPTER IV.—BEATING, PRESSING, &C.

Supposing all the sheets of the volume to have been properly folded, collated, and knocked up even, the binder's next operation is that of beating. A section of the book, or so many equal parts, according to the thickness of the work, is taken to the beating-stone, and well beaten over with the beating-hammer. The section should be held in the left hand, and gradually drawn over towards the body, so as to bring each part under the hammer in its turn, not striking any one part of the main portion of the section more than another; but, if thought to be necessary, the edges of the section may be given an extra blow. One side of the section having been thus beaten, similar treatment should be administered to the reverse side. The section must be next divided, the bottom half placed on the top, and again submitted to an even hammering all over. After this the sheets are to be restored to their original position, i.e., placed in numerical order, and an extra gentle tap or two will make the whole solid and even. So on with each section till the entire book is beaten.

The careful workman generally places a guard, or waste sheet of paper, on each side of the section he is beating, so as to prevent marks of the hammer-head from being left on the sheets as they are struck, or render it impossible for the stone to soil the under part of the section. Nothing is so annoying to a lover of books as to find the leaves stained or bruised.

Much more skill and judgment is required in beating a book than many people suppose. The hammer must be made to fall flat on the section; if it does not, probably a portion of the section will be indented by the hammer's edge, and that cannot be easily beaten out. Some workmen use too much strength, when very little would do, the weight of the hammer often being quite sufficient for the purpose, according to the quality or substance of the paper, and the thickness of the section. An idea of the best way to hold the hammer may be gained by reference to the diagram here shown. In olden time the beating stone was generally a block of polished black marble, mounted on a stand; now, where beating is resorted to, the stone has given place to an iron plate, which if kept clean and bright, is preferable, as it is not so liable to fracture. The latter costs from about £2 and upwards, according to size. Beating-hammers cost about 4s. each.

In these enlightened days when most bookbinders work intelligently, and not as many of their predecessors did by "rule of thumb," it would seem almost unnecessary to warn them against beating the sections of a book before the print is quite dry. These papers, however, would be incomplete were such a warning not given. Few things look so bad as a book, the leaves of which have been untimely beaten, and the text of one page of which has "set-off" on its opposite neighbour. There is still great fear of this occurring occasionally,
more especially in these days of driving and rushing, when sufficient time is not allowed for all precautions to be observed. Recently, a trade catalogue, which had been well printed but bound in pamphlet form too soon, was put into the writer's hands. Upon opening the leaves, many pages, especially the illustrated ones, had "set-off" on to the opposing pages; the effect was ruinous to the general appearance of the book. This may not have occurred through beating, but through rolling, which system has almost superseded beating; whichever way, it was done too soon.

In about the year 1844 or '45, Mr. Burn, a member of a large firm of bookbinders, exhibited to a committee of the Society of Arts a new invention, called a Rolling Machine.

The accompanying illustration is a facsimile of the original drawing. This machine, which has since been greatly improved upon by various engineers, has superseded beating in all extensive binderies. The beating-stone and hammer, however, is still necessary for the small binder, primitive though it be. A description of this machine, published in 1848, may not prove uninteresting. The present generation of bookbinders will be able to compare this "original roller" with those now worked by steam.

"The power of compression is given by the two iron cylinders, which are about a foot in diameter, the upper one of which can be regulated by means of the handle seen at the head, to any pressure required. On the frame, in a line with the space between the rollers, is placed a table or board for beating the book up even, and more steadily passing it through. The handle of the wheel in front, being turned by a powerful man, gives motion to the others, and thus exerts a force on the rollers in a proportion of five-sixths over that of beating."

Mr. Burn delighted the Committee of Inspection by rolling a Minion Bible through his machine in one minute. He afterwards received the Society of Arts silver medal for the invention.

(To be continued.)